

Title: Conservation Decision Support System Design for West Indian Manatee Habitat Suitability and Protection.

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Abstract

Manatees along Florida's western coastline are being severely affected by major hazards such as watercraft, red tide, seagrass depletion, and cold stress. Conservation effort by public and government authorities is necessary to safeguard its population from the consequence of latest climate change impact and other human-induced hazards. Thus, the objective of this study is to develop an automated geospatial model to analyze all relevant features responsible for the West Indian Manatee habitat suitability analysis and suggest proper decision support on its conservation. Geospatial data including historical boating collision records, marina site locations, population, chemical runoff, bathymetry, red tide spatial distribution, climate change, and vegetation. All data was processed by clipping the study area extent, projecting to a common UTM NAD 1983 Zone 17N projection system and converting vector data to raster format with common 30m spatial resolution. Each were multiplied with percentage weights and prepared as a Delphi-based analysis. With the advent of 'Weighted Sum' tool in ArcGIS, the individual contributing features were combined to provide the suitable habitat location for West Indian Manatee habitat on a scale of high-moderate-low. We obtained the present conservation location data of the State of Florida. Thus, its intersection analysis with the suitable habitat feature data provided the information on the spatial location that need to be conserved to safeguard the manatees. The critical areas not already safeguarded are then to be proposed to the Fish and Wildlife Department for consideration in the creation of new protected habitats, promoting future species growth.